Microbial Genome Sequencing Project

Fiscal Year 2002

Request for Applications

PROPOSAL DEADLINE: May 1, 2002

U.S. Department of Agriculture

Cooperative State Research, Education and Extension Service

SUMMARY: As a collaborative interagency effort, the Cooperative State Research, Education, and Extension Service (CSREES) of the U.S. Department of Agriculture (USDA), and the National Science Foundation (NSF) announce the availability of grant funds and request applications for the Microbial Genome Sequencing Project (MGSP) for fiscal year (FY) 2002. The amount available for support of this program in FY 2002 is at least $9 million ($4 million, CSREES; $5 million, NSF).

This notice identifies the objectives for the MGSP, the eligibility criteria for projects and applicants, and the application forms and associated instructions needed to apply for an MGSP grant. CSREES additionally requests stakeholder input from any interested party for use in the development of the next Request for Applications (RFA) for this program.

DATES: A "Letter of Intent" is requested and due by close of business (COB) on March 15, 2002 (5:00 p.m. Eastern Time). Proposals must be received by COB on May 1, 2002 (5:00 p.m. Eastern Time). Proposals received after this date will not be considered for funding. Comments regarding this RFA are requested within six months from the issuance of this notice. Comments received after that date will be considered to the extent practicable.

ADDRESSES: Applicants are encouraged to send the "Letter of Intent" via e-mail to Dr. Ann Lichens-Park at apark@reeusda.gov. If transmission via e-mail is not possible, the Letter may be sent by express mail to the Microbial Genome Sequencing Project; Room 2336, Waterfront Centre; 800 9th Street, S.W.; Washington, D.C. 20024; or fax the Letter to the Microbial Genome Sequencing Project at (202) 401-6488.

The address for hand-delivered applications or applications submitted using an express mail or overnight courier service is: Microbial Genome Sequencing Project; c/o Proposal Services Unit; Cooperative State Research, Education, and Extension Service; U.S. Department of Agriculture; Room 1307, Waterfront Centre; 800 9th Street, S.W.; Washington, D.C. 20024; Telephone: (202)401-5048. The use of an express mail service is strongly encouraged.

Applications sent via the U.S. Postal Service must be sent to the following address: Microbial Genome Sequencing Project; c/o Proposal Services Unit; Cooperative State Research, Education, and Extension Service; U.S. Department of Agriculture; STOP 2245; 1400 Independence Avenue, S.W.; Washington, D.C. 20250-2245.

Written stakeholder comments should be submitted by mail to: Policy and Program Liaison Staff; Office of Extramural Programs; USDA-CSREES; STOP 2299; 1400 Independence Avenue, S.W.; Washington, D.C. 20250-2299; or via e-mail to: RFP-OEP@reeusda.gov. (This e-mail address is intended only for receiving comments regarding this RFA and not requesting information or forms.) In your comments, please state that you are responding to the Microbial Genome Sequencing Project RFA.

FOR FURTHER INFORMATION CONTACT: Dr. Ann Lichens-Park or Dr. Daniel Jones; Cooperative State Research, Education, and Extension Service; U.S. Department of Agriculture, STOP 2241, 1400 Independence Avenue, S.W.; Washington, D.C. 20250-2241, telephone: 202-401-6466 (Dr. Lichens-Park) or 202-401-6854 (Dr. Jones), fax: 202-401-6488, e-mail: apark@reeusda.gov or ddjones@reeusda.gov; or Dr. Patrick Dennis or Dr. Matthew Kane, National Science Foundation, 4201 Wilson Blvd; Arlington, VA 22230; telephone: (703) 292-8443 (Dr. Dennis) or (703) 292-7189 (Dr. Kane); fax: (703) 292-9064; e-mail: pdennis@nsf.gov or mkane@nsf.gov. Questions dealing with relevance of an organism to the Program can be directed to Dr. Lichens-Park, Dr. Jones, Dr. Dennis or Dr. Kane. Questions dealing with proper proposal format should be directed to Dr. Lichens-Park or Dr. Jones.

STAKEHOLDER INPUT: CSREES is requesting comments regarding this RFA from any interested party. These comments will be considered in the development of the next RFA for the program. Such comments will be used to meet the requirements of section 103(c)(2) of the Agricultural Research, Extension, and Education Reform Act of 1998 (7 U.S.C. 7613(c)(2)). This section requires the Secretary to solicit and consider input on a current RFA from persons who conduct or use agricultural research, education and extension for use in formulating future RFA's for competitive programs. Comments should be submitted as provided for in the Addresses and Dates portions of this Notice.

CATALOG OF FEDERAL DOMESTIC ASSISTANCE: This program is listed in the Catalog of Federal Domestic Assistance under 10.206, National Research Initiative Competitive Grants Program, Microbial Genome Sequencing Project.

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PART I--GENERAL INFORMATION

A. Legislative Authority and Background

FY 2002 USDA support for the Microbial Genome Sequencing Project (MGSP) is authorized under the National Research Initiative (NRI), 7 U.S.C. 450i. The NRI Competitive Grants Program supports research grants addressing key problems of national and regional importance to agriculture, forestry, and related sciences. FY 2001 USDA MGSP support was through the issuance of grant awards pursuant to Section 401 of the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA) (7 U.S.C. 7621), the Initiative for Future Agriculture and Food Systems (IFAFS). If funding under IFAFS is authorized subsequent to the issuance of this RFA, CSREES reserves the right to issue grant awards under either authority or both.

The authority for NSF participation in this program is found in the National Science Foundation Act of 1950, as amended, 42 U.S.C. 1861, *et seq*. Microbes are of great fundamental biological interest, therefore their genomic study is appropriate to the NSF authority.

An Interagency Working Group, established in August 2000, created The Microbe Project to: 1) identify science-based priorities for a national, coordinated effort in microbial science taking advantage of recent advances in genomics; and 2) plan for a collaborative interagency approach to these priorities. (See http://www.ostp.gov/html/microbial/2000microbial/start.htm for the full Microbe Project Report.) One of the Project's goals is to develop a coordinated national effort to sequence microbial genomes of broad agricultural and biological importance. It is expected that through these efforts the resulting information, data, research tools and biological materials can be made readily and openly available to the scientific community at large. The Microbial Genome Sequencing Project is a major step towards achieving this goal of the Microbe Project.

B. Purpose, Priorities and Fund Availability

The purpose of this interagency program announcement is to solicit applications to conduct high-throughput sequencing of genomes of microbes that are of fundamental biological interest, as well as those that are important to the productivity and sustainability of agriculture and forestry, and to the safety and quality of the nation's food supply. Priority will be given to projects that will provide whole genome sequence data and mapping information on microorganisms to fill key gaps in our knowledge of microbial diversity, of microbes that play roles in diverse ecosystems, and/or microbes that have an impact on agriculture and food safety. Priority also will be given to projects that integrate education and outreach and those that establish close collaboration among investigators and end users.

There is no commitment by USDA or NSF to fund any particular application or to make a specific number of awards. The participating agencies anticipate that $9 million in funding will be available this fiscal year.

Applicants may request funding for up to four years. Budget requests should be proportional to the size of the genome(s) to be sequenced. The cost is expected to be 15 cents per nucleotide or less. Larger costs per nucleotide should be clearly justified. It is unlikely that awards will be made in excess of $2.5 million, and because of decreasing sequencing costs, many will likely be considerably lower. Applicants may find it useful to visit the USDA-CSREES and NSF web sites to view abstracts and award sizes from FY 2001. (The appropriate URL for NSF is https://www.fastlane.nsf.gov/servlet/A6QueryList.) For example, in FY 2001 the award sizes ranged from $250,000 to $1,800,000. Awards will be made in the form of grants or cooperative agreements that will be determined at the time of the award. The exact amount of the award will depend on the advice of reviewers, agency priorities, and on the availability of funds. Each participating agency will obligate funds separately. A proposal may be funded by one or both of the participating agencies.

Following review, applicants whose proposals are to be recommended for funding by NSF will be instructed to submit their proposals to NSF electronically by FastLane.

C. Eligibility

1. USDA Eligibility Criteria. The source of USDA funds for the FY 2002 Microbial Genome Sequencing Project is the National Research Initiative Competitive Grants Program (NRI). Except where otherwise prohibited by law, State agricultural experiment stations, all colleges and universities, other research institutions and organizations, Federal agencies, national laboratories, private organizations or corporations, and individuals are eligible to apply for and to receive a competitive grant. Faculty at small and mid-sized academic institutions with limited institutional success and faculty at institutions in USDA Experimental Program for Stimulating Competitive Research (EPSCoR) entities are encouraged to apply (see Part II.A., Project Types, for definitions of small and mid-sized institutions and for EPSCoR eligibility). Applications from scientists at non-U.S. organizations will not be accepted. Award recipients may subcontract to organizations not eligible to apply, provided such organizations are necessary for the conduct of the project.

2. NSF Eligibility Criteria. To compete for NSF funding, proposals are invited from U.S. academic institutions, U.S. non-profit research institutions, and consortia of such institutions with appropriate research and educational facilities. NSF does not normally support research or education activities by scientists, engineers or educators employed by Federal agencies or Federally Funded Research and Development Centers (FFRDCs).

D. Indirect Costs

When submitting an application, institutions should use their current Federal negotiated rate for indirect costs. This is the rate that will be used by NSF in making its awards. However, indirect costs for all competitive proposals funded by CSREES are capped at 19% of total Federal funds provided as prescribed by section 1462 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (7 U.S.C. 3310). Therefore, awards made by CSREES for the Microbial Genome Sequencing Project are subject to the 19 percent indirect costs limitation. (This limitation also applies to the recovery of indirect costs by any subawardee or

subcontractor, and should be reflected in the subrecipient budget.) If a proposal is funded by USDA/CSREES, the indirect cost rate will be recalculated and the award level will be adjusted accordingly. A method for calculating the maximum allowable amount of indirect costs for a USDA award is to multiply total direct costs by 0.23456. To accommodate the differences in allowable indirect costs between USDA and NSF, the applicant may be required at the time of award to submit a separate budget with indirect cost rates appropriate to each agency.

E. Funding Restrictions

1. Funds for Buildings and Facilities.

Federal project funds may not be used for the renovation or refurbishment of research spaces, purchase or installation of fixed equipment in such spaces, or for the planning, repair, rehabilitation, acquisition, or construction of a building or a facility. In addition, the offer or availability of matching funds may not be taken into consideration in making an award.

2. Funds for Human Cloning**.**

In accordance with the President's Memorandum of March 4, 1997, regarding the use of Federal funds for the cloning of human beings (33 Weekly Comp. Pres. Doc. 278), Microbial Genome Sequencing Project funds shall not be used to support, fund, or undertake any cloning activity that could lead to the creation of a new human being with genetic material identical to that of another human being, including research related directly thereto. The prohibition on use of grant funds to support human cloning activity includes using, or making available for use, grant-funded equipment for use in connection with human cloning. This ban does not restrict research into the cloning of plants, animals, or individual human cells that cannot develop into a new human being.

F. Types of Applications

In FY 2002, applications may be submitted to the Microbial Genome Sequencing Project as one of the following types of requests:

(1) **New application.** This is a project application that has not been previously submitted to the Microbial Genome Sequencing Project. All new applications will be reviewed competitively using the selection process and evaluation criteria described in Part IV--Review Process.

(2) **Renewal application.** This is a project application that requests additional funding for a project beyond the period that was approved in an original or amended award. Applications for renewed funding must contain the same information as required for new applications, and additionally must contain a Progress Report (see Content of Applications, Part III. C 6). Renewal applications must be received by the relevant due dates. They will be evaluated in competition with other pending applications and will be reviewed according to the same evaluation criteria as new applications.

(3) Resubmitted application. This is an application that had previously been submitted to the FY 2001 Microbial Genome Sequencing Project or the FY 2000 Microbial Genome Program but not funded. Project Directors (PD's) must respond to the previous review panel summary and reviewer comments (see Response to Previous Review, Part III.C. 5). Resubmitted applications must be received by the relevant due dates. They will be evaluated in competition with other pending applications, and will be reviewed according to the same evaluation criteria as new applications.

(4) Resubmitted renewal application. This is a project application that requests additional funding for a project beyond the period that was approved in the original award. In addition, this is an application that had previously been submitted for renewal to the FY 2001 Microbial Genome Sequencing Project but not approved. Therefore, PD's must provide a Progress Report (as part of the Project Description, see Part III.C.6), and must respond to the previous review panel summary and reviewers' comments as required under Response to Previous Review, Part III.C.5. Resubmitted renewal applications must be received by the relevant due dates. They will be evaluated in competition with other pending applications, and will be reviewed according to the same evaluation criteria as new applications.

PART II-- PROGRAM DESCRIPTION

A. Project Types

Funding will be supported through Standard Research and Standard Strengthening Awards. The project types for which applications are solicited include:

1. Standard Research Grants

Research will be supported that is fundamental or mission-linked, and that is conducted by individual investigators, co-investigators within the same discipline, or multidisciplinary teams. Any State agricultural experiment station, college, university, other research institution or organization, Federal agency, national laboratory, private organization, corporation or individual may apply. Proposals submitted by non-United States organizations will not be considered for support. (Note: For differences in NSF eligibility criteria please see page 6.)

2. Strengthening Standard Research Project Awards

To contribute to the enhancement of research capabilities in microbial genomics applications are solicited for Strengthening Standard Research Project Awards. Strengthening Standard Research Project Awards are limited to (a) faculties of small and mid-sized academic institutions that are not among the most successful universities and colleges for receiving Federal funds for science and engineering research and (b) project directors at institutions eligible for USDA EPSCoR (Experimental Program for Stimulating Competitive Research) funding. For the purpose of this Program Description, the following definitions apply:

Small and mid-sized institutions means academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students. (Applicants applying under this category should indicate the current total enrollment of the institution in a cover letter.) An institution in this instance is an organization that possesses a significant degree of autonomy. Significant degree of autonomy is defined as being independently accredited as determined by reference to the 2001 Higher Education Directory, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church Virginia 22042, (703) 532-2300.

Limited institutional success means institutions that are **not** among the most successful universities and colleges for receiving Federal funds for science and engineering research. See Table 1 at the end this section for an alphabetical listing of these institutions.

States eligible for **USDA-EPSCoR** funds are those States which have had a funding level from the NRI no higher than the 40th percentile of all States, based on a three-year average (excluding strengthening set-aside funds). For FY 2002, the following States fall into this category:

Alaska	Arkansas	Connecticut

Delaware	Montana	South Carolina
Hawaii	Nevada	South Dakota
Idaho	New Hampshire	Vermont
Kentucky	New Mexico	West Virginia
Maine	North Dakota	Wyoming
Mississippi	Rhode Island	

Other entities eligible for **USDA-EPSCoR** funds in FY 2002 include the following United States commonwealths, territories, possessions and their successors and the District of Columbia:

American Samoa	Northern Marianas
District of Columbia	Puerto Rico
Guam	Virgin Islands
Micronesia	

Applicants requesting consideration as a strengthening standard research project may not have received an NRI competitive research grant (**excluding Seed Grants, Research Career Enhancement Awards, Equipment Grants, and Postdoctoral Fellowships**) within the past five years as evidenced by a project director being listed on a prior Application for Funding (Form CSREES-661) from a funded proposal. (Form CSREES-661 has been revised and is now Form CSREES-2002, Proposal Cover Page.) All principal *and* co-principal investigators must meet all eligibility requirements for the Standard Strengthening Research Project Awards Program. Research colleagues who do not meet eligibility requirements should be designated only as collaborators and should *not* be listed on the Proposal Cover Page (Form CSREES-2002).

Applicants whose proposals are to be recommended for funding by NSF, may be eligible for co-funding under NSF-EPSCoR guidelines. NSF's EPSCoR guidelines may be found at the following web site: http://nsf.gov/cgi-bin/getpub?nsf0043.

Applications for Strengthening Standard Research Project Awards will be reviewed by the peer review panel that reviews the Standard Research Grant Applications. A separate peer review panel will not be assembled to review the applications for the Standard Strengthening Research Project Awards.

Additional guidance concerning Strengthening Research Project awards is available in the NRI Competitive Grants Program Description and Guidelines for Proposal Preparation at www.reeusda.gov/nri.

Investigators may contact Dr. Lichens-Park, regarding questions about suitability of research topics or to verify eligibility.

B. Program Description

Microorganisms dominate the planet in terms of total mass, species diversity, and metabolic diversity. They include plant and animal pathogens, microbes that are beneficial to higher organisms, organisms that synthesize useful products, or play critical roles in the Earth's ecosystems and biogeochemical cycles. Many are of enormous present and future economic and/or agricultural value. Although genome sequence information in itself is only an ordered list of chemical bases, it provides the foundation for understanding how the organism functions and lives, and how the organism interacts with the environment and with other organisms. This knowledge can be used to detect unknown micro-organisms and to understand their properties, e.g. why an organism may be pathogenic or beneficial to a plant or animal, or how its properties might be exploited in metabolic engineering, bioremediation, development of sensitive and specific diagnostic tools, improved treatments and preventatives, or more effective vaccines. Knowledge of the genomes of microorganisms is expected to be one of the prime driving forces for research in the life sciences, including agriculture, biotechnology, forestry, food safety, and environmental engineering over the next quarter century.

This program is designed to encourage competitive research grant applications in support of high-throughput sequencing of genomes of microorganisms (including viruses, bacteria, archaea, fungi, and protozoa) that are of fundamental biological interest, and/or those that are important to the productivity and sustainability of agriculture and forestry, and to the safety and quality of the nation's food supply. This program will provide whole genome sequence data and mapping information on microorganisms that will fill key gaps in our knowledge of microbial diversity, of microbes that play roles in diverse ecosystems, and/or microbes that have an impact on agriculture. Sequencing proposals are encouraged to incorporate an education, training, or outreach component within the scope of the project to facilitate education of students and the public, as well as to facilitate application of this knowledge to agricultural challenges, where applicable. Education or outreach components may focus on genomics technology or on computational biology and informatics.

It is recognized that complete genome coverage is the most desirable end-point for whole genome sequencing. However, agriculturally and environmentally relevant microbes encompass a sizable number of microorganisms relevant to animals, plants, and natural resources. To date, few agricultural or environmental microbes have been sequenced. Consequently, agriculture and environmental biology lag behind other fields, such as human health and energy production, with respect to microbial genomics. For this reason, it may be appropriate in some cases to attempt lower level coverage to provide data on multiple organisms. Choice of complete sequence or draft coverage is left up to the principal investigators and should be justified in the proposal. As a longer term goal, full genome coverage of several (or all) of these organisms may be desirable. Therefore, investigators proposing partial coverage should explain how accessibility to the scientific community will be maintained for the strains or isolates used, and high quality genomic DNA from the organism, and an appropriate set of verified clones developed during the course of the sequencing project. These items should be accessible to the scientific community

for at least five years. Either a cost-recovery system or use of a commercial repository is permissible, provided that the plan is outlined in the proposal, with an appropriate budget. Studies aimed at determining the functions of sequenced genes (Functional Genomes) are not within the scope of the Microbial Genome Sequencing Project. Such studies are within the scope of other Programs offered by USDA (e.g. the National Research Initiative's Biology of Plant-Microbe Associations Program and the Animal Health and Well-being Program) and by NSF (e.g. the Microbial Genetics Program). For more information about these programs, please see the following web sites: www.reeusda.gov/nri and www.nsf.gov.

Microbial genome projects will be chosen with respect to each agency's mission (fundamental biological interest – NSF, agricultural relevance – USDA). Specific examples of organisms of interest to USDA include high priority pathogens of: animals (e.g Avian Escherichia coli, Edwardsiella ictaluri, Eimeria spp., Mycoplasma bovis); plants (e.g., Streptomyces scabies, Aspergillus spp., Fusarium graminearum, Pantoea stewartii supsp. Stewartii, Soybean mosaic virus), or; food-borne origin (e.g., Toxoplasma gondii). Choices might also include beneficial/useful organisms such as ones from soil (e.g., mycorrhizal fungi, Rhizobium spp., Methylobacterium extorquens, Pseudomonas spp.) or rumen. Microorganisms relevant to aquaculture species and horses are included, along with microorganisms of animals raised for food and fiber. By the time this solicitation is released, it is possible that the sequencing of one or more of these example organisms may already be funded for the public domain; mention here does not guarantee a high priority for sequencing.

Clearly, a large number of microorganisms fit these broad criteria and it is not the intention of USDA or NSF to dictate which organisms should be sequenced. Rather, the choice of organism(s) will be left to the applicant(s) who must justify selection(s) on the basis of biological interest and/or agricultural importance. Organism strains whose sequences are already being targeted by others should be avoided, unless this information will not be in the public domain. If one strain in a particular species is already being sequenced, the applicant should provide strong justification as to why sequencing of another strain should be undertaken. To help assess the current sequencing status for particular microorganisms, applicants are strongly encouraged to visit websites that summarize completed and on-going sequencing projects. For example, the following URL sites may prove useful:
http://www.tigr.org/tdb/mdb/mdb.html;
http://www.science.doe.gov/ober/EPR/mig_cont.html;
http://www.niaid.nih.gov/dmid/genomes/default.htm;
http://www.sanger.ac.uk/Projects/;
http://www.genome.wisc.edu;
http://www.genome.wustl.edu/gsc;
http://hgsc.bcm.tmc.edu.
Phylogenetic affiliation and evolutionary significance are other factors that may also be relevant in justifying the choice of organism. Also, it should be noted that some organisms may be of profound biological or agricultural importance but not easily cultured or subjected to genetic analysis. Such organisms may be strong candidates for sequencing.

Protozoa, fungi and some bacteria have relatively large genomes, not easily completed under the support of a single grant. Requests for partial funding of a genome are allowable as long as

future plans for completing the work are outlined. In these instances, investigators are encouraged to seek partners, in either the form of consortia or support from other sources, so that the sequence can be completed in a reasonable time-frame. As long as the goals and limits of the individual projects are clearly addressed, such cooperative projects are encouraged, as are international collaborations. The expected outcome of the project will be a high quality sequence, much or all of it contiguous, with annotation of open reading frames and deposition in a publicly accessible data base. Additionally, for eukaryotic organisms, applications may propose large-scale expressed sequence tag (EST) projects. For these larger genomes, applicants should indicate the status of efforts supported by other funding agencies and how these efforts would be coordinated with a USDA or NSF funded activity.

Investigators are to provide detailed information on the organism(s) chosen, the method of library preparation and all other pertinent methodological information. Mechanisms to assess validity and accuracy of the data must be described in the proposal. All cloning and sequencing technologies/strategies, particularly ones that are novel, should be described. In judging the merits of a proposal, the speed, level of accuracy, and cost effectiveness of the proposed work will be important issues and considered as one of the evaluation criteria under this program. The number of bases to be sequenced per unit time and an estimate of the dollars required to produce a specific amount of base sequence must be calculated. The latter value should include the costs of generating clones, assembly of sequence and annotation.

PART III--PREPARATION OF A PROPOSAL

A. Letter of Intent

Applicants are strongly encouraged to submit a Letter of Intent before submitting a full proposal. This letter should consist of three parts: (1) a descriptive title of the proposed project; (2) names and roles of project directors and other key personnel along with their institutions; and (3) a brief statement of approaches and objectives (500 words or less), including a listing of the organism(s) to be sequenced. This information will be used by CSREES and NSF staff in planning the review process. Applicants are encouraged to send the Letter of Intent via e-mail to Dr. Ann Lichens-Park at apark@reeusda.gov. If transmission via e-mail is not possible, the letter may be sent by express mail to the Microbial Genome Sequencing Project; Room 2336, Waterfront Centre; 800 9th Street, S.W.; Washington, D.C. 20024; or fax the Letter to the Microbial Genome Sequencing Project at (202) 401-6488. Because Letters of Intent will not be distributed for peer review, there will be no feedback from CSREES or NSF staff regarding the content of these letters. Failure to submit a Letter of Intent will not preclude applicants from submitting full proposals. However, submission of a Letter of Intent is nonetheless encouraged.

B. Program Application Materials

Program application materials are available at the CSREES Funding Opportunities web site (http://www.reeusda.gov/1700/funding/ourfund.htm). If you do not have access to the web page or have trouble downloading material and you would like a hardcopy, you may contact the Proposal Services Unit, Office of Extramural Programs, USDA/CSREES at (202) 401-5048. When calling the Proposal Services Unit, please indicate that you are requesting the RFA and associated application forms for the Microbial Genome Sequencing Project. These materials also may be requested via Internet by sending a message with your name, mailing address (not e-mail) and phone number to psb@reeusda.gov. State that you want a copy of the RFA and the associated application forms for the Microbial Genome Sequencing Project.

C. Content of Applications

The applications should be prepared following the guidelines and the instructions below. Each application must contain the following elements in the order indicated:

1. General

Use the following guidelines to prepare an application. Proper preparation of applications will assist reviewers in evaluating the merits of each application in a systematic, consistent fashion:

(a) Prepare the application on only one side of the page using standard size (8 1/2" x 11") white paper, one-inch margins, typed or word processed using no type smaller than 12 point font, and single or double spaced. Use an easily readable font face (e.g., Geneva, Helvetica, Times Roman).

(b) Number each page of the application sequentially, starting with the Project Description, including the budget pages, required forms, and any appendices.

(c) Staple the application in the upper left-hand corner. Do not bind. An original and 14 copies (15 total) must be submitted in one package, along with 10 additional copies of the "Project Summary," Form CSREES-2003, as a separate attachment.

(d) Include original illustrations (photographs, color prints, etc.) in all copies of the application to prevent loss of meaning through poor quality reproduction.

(e) The contents of the application should be assembled in the following order:

(1) Proposal Cover Page (Form CSREES-2002)
(2) Table of Contents
(3) Project Summary (Form CSREES-2003)
(4) Response to Previous Review
(5) Project Description
(6) References
(7) Appendices to Project Description
(8) Key Personnel
(9) Collaborative Arrangements (including Letters of Support)
(10) Conflict-of-Interest List (Form CSREES-2007)
(11) Budget (Form CSREES-2004)
(12) Budget Narrative
(13) Matching
(14) Current and Pending Support (Form CSREES-2005)
(15) Assurance Statement(s) (Form CSREES-2008)
(16) Compliance with the National Environmental Policy Act (NEPA) (Form CSREES-2006)
(17) Page B, Proposal Cover Page (Form CSREES-2002), Personal Data on Project Director

2. Proposal Cover Page (Form CSREES-2002)

Page A

Each copy of each grant application must contain a "Proposal Cover Page", Form CSREES-2002. One copy of the application, preferably the original, must contain the pen-and-ink signature(s) of the proposing PD's and the authorized organizational representative (AOR), the individual who possesses the necessary authority to commit the organization's time and other relevant resources to the project. If there are more than four co-PD's for an application, please list additional co-PD's on a separate sheet of paper (with appropriate information and signatures) and attach to the Proposal Cover Page (Form CSREES-2002). Any proposed PD or co-PD whose signature does not appear on Form CSREES-2002 or attached additional sheets will not be listed on any resulting grant award. Complete both signature blocks located at the bottom of the "Proposal Cover Page" form. Please note that Form CSREES-2002 is comprised of two

parts - Page A which is the "Proposal Cover Page" and Page B which is the "Personal Data on Project Director."

Form CSREES-2002 serves as a source document for the CSREES grant database; it is therefore important that it be accurately completed in its entirety, especially the e-mail addresses requested in blocks 4.c. and 18.c. However, the following items are highlighted as having a high potential for errors or misinterpretations:

(a) Type of Performing Organization (Block 6A and 6B). For block 6A, a check should be placed in the appropriate box to identify the type of organization that is the legal recipient named in block 1. Only one box should be checked. For block 6B, please check as many boxes that apply to the affiliation of the PD listed in block 16.

(b) Title of Proposed Project (Block 7). The title of the project must be brief (140-character maximum, including spaces), yet represent the major thrust of the effort being proposed. Project titles are read by a variety of nonscientific people; therefore, highly technical words or phraseology should be avoided where possible. In addition, introductory phrases such as "investigation of," "research on," "education for," or "outreach that" should not be used.

(c) Program to Which You Are Applying (Block 8). Enter USDA-NRICGP/NSF Microbial Genome Sequencing Project 23.2.

(d) Type of Request (Block 14). Check the appropriate block.

(e) Project Director (PD) (Blocks 16-19). Blocks 16-18 are used to identify the PD and Block 19 to identify co-PD's. If needed, additional co-PD's may be listed on a separate sheet of paper and attached to Form CSREES-2002, the Proposal Cover Page, with the applicable co-PD information and signatures. Listing multiple co-PD's, beyond those required for genuine collaboration, is discouraged.

(f) Other Possible Sponsors (Block 21). List the names or acronyms of all other public or private sponsors including other agencies within USDA to which your application has been or might be sent. In the event you decide to send your application to another organization or agency at a later date, you must inform the identified CSREES program contact as soon as practicable. Submitting your application to other potential sponsors will not prejudice its review by CSREES; however, submitting the same (i.e., duplicate) application to another CSREES program is not permissible.

Page B

Page B should be submitted only with the original signature copy of the application and should be placed as the last page of the original copy of the application. This page contains personal data on the PD(s). CSREES requests this information in order to

monitor the operation of its review and awards processes. This page will not be duplicated or used during the review process. Please note that failure to submit this information will in no way affect consideration of your application.

3. Table of Contents

For consistency and ease in locating information, each application must contain a detailed Table of Contents immediately following the proposal cover page. The Table of Contents should contain page numbers for each component of the application. Page numbering should begin with the first page of the Project Description.

4. Project Summary (Form CSREES-2003)

The application must contain a "Project Summary," Form CSREES-2003. The summary should be approximately 250 words, contained within the box, placed immediately after the Table of Contents, and not numbered. The names and affiliated organizations of all PD's and co-PD's should be listed on this form, in addition to the title of the project. The summary should be a self-contained, specific description of the activity to be undertaken and should focus on: overall project goal(s) and supporting objectives; plans to accomplish project goal(s); and relevance of the project to the goals of the Microbial Genome Sequencing Project. The importance of a concise, informative Project Summary cannot be overemphasized. If there are more than four co-PD's for an application, please list additional co-PD's on a separate sheet of paper (with appropriate information) and attach to the Project Summary (Form CSREES-2003).

5. Response to Previous Review

This requirement only applies to "Resubmitted Applications" and "Resubmitted Renewal Applications" as described under Part I, F, "Types of Applications." Project Directors (PD's) must respond to the previous review panel summary and reviews on no more than one page, titled "RESPONSE TO PREVIOUS REVIEW," which is to be placed directly after the "Project Summary," Form CSREES-2003. If desired, additional comments and responses to the previous panel summary and reviews may be included in the text of the Project Description, subject to page limitation.

6. Project Description

A description of the project must not exceed 18 pages inclusive of tables, diagrams and other visual material, but excluding citations. Renewal and resubmitted renewal applications should contain an additional section providing a Progress Report. The Progress Report must be within the 18 page limit established for the Project Description. This maximum has been established to ensure fair and equitable competition. In addition, the following points must be addressed in this section:

a. Relevance and significance of microorganism(s) and other proposed activities.

Include a justification for the microorganism(s) on the basis of biological interest and/or agricultural importance. Include a description of the significance of education/training or outreach activities and their value in improving agriculture and/or fundamental biology. Clearly describe the potential impact of the project.

b. Sequencing Strategies

i. DNA substrates to be sequenced. Investigators are to provide detailed information on the DNA chosen, the method of library preparation and all other pertinent methodological information. Investigators should clearly show the strategy for sequencing. This includes the type of product that will result (e.g. survey sequence, full coverage, assembled sequence, ordered and oriented or finished sequence and, if pertinent, how the sequence data will be assembled). They should state the size of the genome(s) to be sequenced as accurately as possible. If exact genome size is not known, possible size ranges should be described, along with data used in determining the estimate. If only a portion of a microbial genome will be sequenced (e.g. fungi or protozoa), the strategies proposed must be scalable and applicable to efforts to sequence the entire genome. Investigators should denote the types of template and approach that will be used (e.g. Bacterial Artificial Chromosome-based (BAC)-based, plasmid or m13 subclone libraries, whole genome shotgun, or paired end reads) to obtain the sequence. They should also indicate the amount of template to be cloned and the amount that will be archived. They should address the accessibility of the sequence clones and genomic DNA. For example, they should state whether the same clone will be available if more DNA is needed. They should describe how the sequence data will be assembled.

ii. Sequence quality and quantity. This section should include the level of accuracy to be sought and how that will be measured, the number of bases to be sequenced per unit time, and a discussion of the finishing process and how that will be defined. For example, if a BAC-based template is used, how will E. coli content be monitored and what maximum levels of E. coli DNA will be tolerated? For whole genome shotgun, how will sequence depth be correlated with genome coverage? How will sequence be confirmed to be the correct organism? If concurrent projects are ongoing, the monitoring of cross-contamination (lab or electronic) must be addressed. For paired reads, methods to measure and monitor read pair accuracy should be described. Both the methods for assembly evaluation and for user access to assembly evaluation should be provided. Where applicable, plans to fill sequence gaps and coordinate sequencing efforts must be discussed in detail.

iii. Genome sequencing technologies and strategies. Technologies/strategies that will be used should be described as well as plans for incorporating new developments and/or improvements in sequencing protocols, strategies and technologies as they become available.

iv. Costs of production sequencing in relation to the product proposed. The cost-effectiveness of the sequences generated will be a very important issue. An estimate of the dollars required to produce a specific number of bases (which should include the costs of generating clones, assembly and annotation as well as cost per read) should be given. A cost per read should be defined as the costs incurred to produce the required number of successful reads (i.e. passing reads that contribute to the final product.) As an example, the costs of cloning and sequencing 10% contaminating Escherichia coli DNA at 10% in a BAC-based project should be charged for the 90% of the desired sequence. If investigators are proposing a strategy that will yield less than the complete genome sequence, they must provide an overall vision of how this strategy will contribute to the cost-effective completion of the entire genome.

c. Project Management

i. Plans for establishing a linkage to a larger research community in order to ensure a close collaboration between the sequencing project and the ultimate user community of the sequence information are required. The Project Director is expected to organize a community workshop at the project's conclusion in order to assure: (1) an understanding of the data; (2) access to resources such as genomic DNA and clones; and , (3) community-wide planning for the next step(s) to maximize use of the data. The budget should include funds to organize this workshop.

ii. Where applicable, plans for establishing coordination with other existing or planned projects to sequence the microbe(s), both nationally and internationally.

iii. Ways to assess progress of the project, including establishing milestones and measuring progress toward them, and/or the use of an advisory committee when applicable. Investigators should describe how adjustments will be made if the project progresses more slowly than expected. They should describe what types of data will be made available to the public (e.g. assemblies, reads or traces) and how often the publicly available datasets will be updated.

iv. Available facilities and equipment, including a statement of institutional commitment for the successful completion of the project. Investigators should describe the total sequencing capacity that will be available for the project (i.e. the number of productive reads per week) and the number and type of sequencing instruments (e.g. an ABI 377 DNA Sequencer) that will be used. If available, estimates of the percentage of sequencer downtime, percentage of sequencing pass rate, and percentage of library pass rate should be given.

d. Information Management

i. The data management plan should address issues, including: (1) mechanisms to assess validity and accuracy of data obtained; (2) mechanisms for annotation of

data and release of both raw and finished data into public databases -- creative, cost-effective strategies for annotating sequences are encouraged; and
(3) community access to data mechanisms of data distribution and interactions with other community databases.

ii. Data release policies including how rapidly sequence data will be publicly released after production. Timely release is strongly encouraged in recognition of the benefits to the broader research community. Release should be accompanied by appropriate information on the reliability of the data (e.g., level of coverage and extent of assembly, extent of contamination with vector and other sequences, statistical measures of accuracy). At a minimum, it is anticipated that sequence data will be released within one month after 3X coverage of the genome (or chromosome for eukaryotic organisms) is achieved. The released data should be provided as assemblies of equal to, or greater than, one kilobase contigs. Subsequent releases of assembled sequences should be provided at least on a monthly basis.

iii. A statement signed by an authorized institutional official should be included which clearly describes the institutional policy for sharing information materials resulting from this work with other researchers of the community of scientists. Ideally, such a statement should be signed by the Authorized Organizational Representative (AOR) or Dean. However, if an institution does not have such a policy in place, a description of the plan for information sharing should be included (i.e. mechanism by which data will be made available, timetable for release of sequence information etc.)

7. References

All references to works cited should be complete, including titles and all co-authors, and should conform to an acceptable journal format. References are not considered in the page-limitation for the Project Description.

8. Appendices to Project Description

Appendices to the Project Description are allowed if they are directly germane to the proposed project and are limited to a total of two of the following: reprints (papers that have been published in peer reviewed journals) and preprints (manuscripts in press for a peer reviewed journal; these must be accompanied by a letter of acceptance from the publishing journal). Letters of support from members of the scientific community, commodity groups or other stakeholders can also be appended. The addition of appendices should not be used to circumvent the text and/or figures and tables page limitations.

9. Key Personnel

The following should be included, as applicable:

(a) The roles and responsibilities of each PD and/or collaborator should be clearly described; and

(b) The vitae of the PD and each co-PD, senior associate, and other professional personnel. This section should include vitae of all key persons who are expected to work on the project, whether or not CSREES or NSF funds are sought for their support. The vitae should be limited to two (2) pages each in length, excluding publications listings. The vitae should include a presentation of academic and research credentials, as applicable, e.g., earned degrees, teaching experience, employment history, professional activities, honors and awards, and grants received. A chronological list of **all** publications in **refereed journals** during the past **four (4) years,** including those in press, must be provided for each project member for whom a curriculum vitae is provided. Also list only those **non-refereed** technical publications that have **relevance** to the proposed project. All authors should be listed in the same order as they appear on each paper cited, along with the title and complete reference as these usually appear in journals.

10. Collaborative Arrangements

If it will be necessary to enter into formal consulting or collaborative arrangements with others, such arrangements should be fully explained and justified. If the consultant(s) or collaborator(s) are known at the time of application, a vitae or resume should be provided. In addition, evidence (e.g., letter of support) should be provided that the collaborators involved have agreed to render these services. The applicant also will be required to provide additional information on consultants and collaborators in the budget portion of the application. See instructions in the application forms for completing Form CSREES-2004, Budget.

11. Conflict-of-Interest List (Form CSREES-2007)

A "Conflict-of-Interest List," Form CSREES-2007, must be provided for all individuals who have submitted a vitae in response to item 9.(b) of this part. Each Form CSREES-2007 should list alphabetically, by the last names, the full names of the individuals in the following categories: (a) All co-authors on publications within the past four years, including pending publications and submissions; (b) all collaborators on projects within the past four years, including current and planned collaborations; (c) all thesis or postdoctoral advisees/advisors within the past four years; and (d) all persons in your field with whom you have had a consulting or financial arrangement within the past four years, who stand to gain by seeing the project funded. This form is necessary to assist program staff in excluding from application review those individuals who have conflicts of interest with the personnel in the grant application. The program contact must be informed of any additional conflicts of interest that arise after the application is submitted.

12. Budget

a. General

(1) Budget Form (Form CSREES-2004)

Prepare the Budget, Form CSREES-2004, in accordance with instructions provided with the application forms. Budget requests should be proportional to the size of the genome to be sequenced. The cost is expected to be 15 cents per nucleotide or less. Larger costs per nucleotide should be clearly justified. Please note that USDA and NSF expect to make numerous awards from the approximately $9 million Microbial Genome Sequencing Project budget. Awards in excess of $2.5 million are unlikely to be made.

A budget form is required for each year of requested support. In addition, a cumulative budget is required detailing the requested total support for the overall project period. The budget form may be reproduced as needed by applicants. Funds may be requested under any of the categories listed on the form, provided that the item or service for which support is requested is allowable under the authorizing legislation, the applicable statutes, regulations, and Federal cost principles, and these program guidelines, and can be justified as necessary for the successful conduct of the proposed project. Applicants also must include a budget narrative to justify their budget requests (see section b. below.)

The following guidelines should be used in developing your application budget(s):

a. Salaries and Wages. Salaries and wages are allowable charges and may be requested for personnel who will be working on the project in proportion to the time such personnel will devote to the project. If salary funds are requested, the number of Senior and Other Personnel and the number of CSREES/NSF-Funded Work Months must be shown in the spaces provided. Grant funds may not be used to augment the total salary or rate of salary of project personnel or to reimburse them for time in addition to a regular full-time salary covering the same general period of employment. Salary funds requested must be consistent with the normal policies of the institution.

b. Fringe Benefits. Funds may be requested for fringe benefit costs if the usual accounting practices of your organization provide that organizational contributions to employee benefits (social security, retirement, etc.) be treated as direct costs. Fringe benefit costs may be included only for those personnel whose salaries are charged as a direct cost to the project.

c. Nonexpendable Equipment. Nonexpendable equipment means tangible nonexpendable personal property including exempt property charged directly to the award having a useful life of more than one year and an acquisition cost of $5,000 (or lower, depending on institutional policy) or more per unit. As such, items of necessary instrumentation or other nonexpendable equipment should be listed individually by description and estimated cost in the Budget Narrative. This applies to revised budgets as well, as the equipment item(s) and amount(s) may change.

d. Materials and Supplies. The types of expendable materials, supplies, and data which are required to carry out the project should be indicated in general terms with estimated costs in the Budget Narrative.

e. Travel. The type and extent of travel and its relationship to project objectives should be described briefly and justified. If travel is proposed, the destination, the specific purpose of the travel, a brief itinerary, inclusive dates of travel, and estimated cost must be provided for each trip. Airfare allowances normally will not exceed round-trip jet economy air accommodations. U.S. flag carriers must be used when available. See 7 CFR Part 3015.205(b)(4) for further guidance. Please note that grantees are expected to present their project plan at an annual workshop for awardees and should allocate an appropriate amount in this budget category to fund a trip. Additional information on this meeting will be made available if an award is made.

f. Publication Costs/Page Charges. Include anticipated costs associated with publications in a journal (preparing and publishing results including page charges, necessary illustrations, and the cost of a reasonable number of coverless reprints) and audio-visual materials that will be produced. Photocopying and printing brochure, etc., should be shown in Section I., "All Other Direct Costs" of Form CSREES-55.

g. Computer (ADPE) Costs. Reimbursement for the costs of using specialized facilities (such as a university- or department-controlled computer mainframe or data processing center) may be requested if such services are required for completion of the work.

h. All Other Direct Costs. Anticipated direct project charges not included in other budget categories must be itemized with estimated costs and justified in the Budget Narrative. This includes funds required to organize a community workshop at the project's conclusion. This also applies to revised budgets, as the item(s) and dollar amount(s) may change. Examples may include space rental at remote locations, subcontractual costs, and charges for consulting services, telephone, facsimile, shipping costs, and fees necessary for laboratory analyses. You are encouraged to consult the "Instructions for Completing Form CSREES-55, Budget," of the Application Kit for detailed guidance relating to this budget category. Form AD-1048 must be completed by each subcontractor or consultant and retained by the grantee.

(2) Indirect Costs

When submitting an application, institutions should use their current Federal negotiated rate for indirect costs. This is the rate that will be used by NSF in their awards.

Please note that indirect costs for all competitive proposals funded by CSREES are capped at 19% of total Federal funds provided under the award by section 1462 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (7 U.S.C. 3310). Therefore, awards made by CSREES for the Microbial Genome Sequencing Project are subject to the 19 percent indirect cost limitation. (This limitation also applies to the recovery of indirect costs by any subawardee or subcontractor, and should be reflected in the subrecipient budget.) If a proposal is funded by USDA/CSREES, the indirect cost rate will be recalculated and the award level will be adjusted accordingly. A method for calculating the maximum allowable amount of indirect costs for an USDA award is by multiplying total direct costs by 0.23456. To accommodate the differences in allowable indirect costs between USDA and NSF, the applicant may be required at the time of award to submit a separate budget with indirect cost rates appropriate to each agency.

b. Budget Narrative

All budget categories, with the exception of Indirect Costs, for which support is requested, must be individually listed (with costs) in the same order as the budget and justified on a separate sheet of paper and placed immediately behind the Budget form.

13. Current and Pending Support (Form CSREES-2005)

All applications must contain Form CSREES-2005 listing other current public or private support (including in-house support) to which personnel (i.e., individuals submitting a vitae in response to item 9.(b) of this part) identified in the application have committed portions of their time, whether or not salary support for person(s) involved is included in the budget. Please follow the instructions provided on this form. Concurrent submission of identical or similar applications to the possible sponsors will not prejudice application review or evaluation by the CSREES. However, an application that duplicates or overlaps substantially with an application already reviewed and funded (or to be funded) by another organization or agency will not be funded under this program. **Please note that the project being proposed should be included in the pending section of the form.**

14. Assurance Statement(s) (Form CSREES-2008)

A number of situations encountered in the conduct of projects require special assurances, supporting documentation, etc., before funding can be approved for the project. In addition to any other situation that may exist with regard to a particular project, applications involving any of the following elements must comply with the additional requirements as applicable.

a. Recombinant DNA or RNA Research

As stated in 7 CFR Part 3015.205 (b)(3), all key personnel identified in the application and all endorsing officials of the proposing organization are required to comply with the guidelines established by the National Institutes of Health entitled,

"Guidelines for Research Involving Recombinant DNA Molecules," as revised. If your project proposes to use recombinant DNA or RNA techniques, you must so indicate by checking the "yes" box in Block 20 of Form CSREES-2002 (the Proposal Cover Page) and by completing Section A of Form CSREES-2008. For applicable applications recommended for funding, Institutional Biosafety Committee approval is required before CSREES funds will be released. Please refer to the application forms for further instructions.

b. Animal Care

Responsibility for the humane care and treatment of live vertebrate animals used in any grant project supported with funds provided by CSREES rests with the performing organization. Where a project involves the use of living vertebrate animals for experimental purposes, all key personnel identified in an application and all endorsing officials of the proposing organization are required to comply with the applicable provisions of the Animal Welfare Act of 1966, as amended (7 U.S.C. 2131 et seq.), and the regulations promulgated thereunder by the Secretary in 9 CFR Parts 1, 2, 3, and 4 pertaining to the care, handling, and treatment of these animals. If your project will involve these animals, you should check "yes" in block 20 of Form CSREES-2002 and complete Section B of Form CSREES-2008. In the event a project involving the use of live vertebrate animals results in a grant award, funds will be released only after the Institutional Animal Care and Use Committee has approved the project. Please refer to the application forms for further instructions.

c. Protection of Human Subjects

Responsibility for safeguarding the rights and welfare of human subjects used in any grant project supported with funds provided by CSREES rests with the performing organization. Guidance on this issue is contained in the National Research Act, Pub. L. No. 93-348, as amended, and implementing regulations promulgated by the Department under 7 CFR Part 1c. If you propose to use human subjects in your project, you should check the "yes" box in Block 20 of Form CSREES-2002 and complete Section C of Form CSREES-2008. Please refer to the application forms for additional instructions.

15. Certifications

Note that by signing Form CSREES-2002 the applicant is providing the certifications required by 7 CFR Part 3017, regarding Debarment and Suspension and Drug-Free Workplace, and 7 CFR Part 3018, regarding Lobbying. The certification forms are included in the application package for informational purposes only. These forms should not be submitted with the application since by signing Form CSREES-2002 your organization is providing the required certifications. If the project will involve a subcontractor or consultant, the subcontractor/consultant should submit a Form AD-1048, Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lower Tier Covered Transactions, to the grantee organization for retention in their records. This form should not be submitted to USDA.

16. Compliance with the National Environmental Policy Act (NEPA) (Form CSREES-2006)

As outlined in 7 CFR Part 3407 (the Cooperative State Research, Education, and Extension Service regulations implementing NEPA), the environmental data for any proposed project is to be provided to CSREES so that CSREES may determine whether any further action is needed. In some cases, however, the preparation of environmental data may not be required. Certain categories of actions are excluded from the requirements of NEPA.

In order for CSREES to determine whether any further action is needed with respect to NEPA, pertinent information regarding the possible environmental impacts of a particular project is necessary; therefore, Form CSREES-2006, "NEPA Exclusions Form," must be included in the application indicating whether the applicant is of the opinion that the project falls within a categorical exclusion and the reasons therefore. If it is the applicant's opinion that the proposed project falls within the categorical exclusions, the specific exclusion(s) must be identified.

Even though a project may fall within the categorical exclusions, CSREES may determine that an Environmental Assessment or an Environmental Impact Statement is necessary for an activity, if substantial controversy on environmental grounds exists or if other extraordinary conditions or circumstances are present which may cause such activity to have a significant environmental effect.

D. Submission of Applications

1. When to Submit (Deadline Date)

A "Letter of Intent" is requested and due by close of business (COB) on March 15, 2002 (5:00 p.m. Eastern Time). Applications must be received by COB on May 1, 2002 (5:00 p.m. Eastern Time). Applications received after this deadline will not be considered for funding.

2. What to Submit

An original and 14 copies must be submitted. In addition submit 10 copies of the application's Project Summary. All copies of the application and the Project Summary must be submitted in one package.

3. Where to Submit

Applicants are strongly encouraged to submit completed applications via overnight mail or delivery service to ensure timely receipt by the USDA. The address for hand-delivered applications or applications submitted using an express mail or overnight courier service is:

Microbial Genome Sequencing Project
c/o Proposal Services Unit

Cooperative State Research, Education, and Extension Service
U.S. Department of Agriculture
Room 1307, Waterfront Centre
800 9th Street, S.W.
Washington, D.C. 20024

Telephone: (202) 401-5048

Applications sent via the U.S. Postal Service must be sent to the following address:

Microbial Genome Sequencing Project
c/o Proposal Services Unit
Cooperative State Research, Education, and Extension Service
U.S. Department of Agriculture
STOP 2245
1400 Independence Avenue, S.W.
Washington, D.C. 20250-2245

D. Acknowledgment of Applications

Receipt of Letters of Intent by CSREES will not be acknowledged.

The receipt of all applications will be acknowledged by e-mail. Therefore, applicants are strongly encouraged to provide accurate e-mail addresses, where designated, on the Form CSREES-2002. If the applicant's e-mail address is not indicated, CSREES will acknowledge receipt of the application by letter.

If the applicant does not receive an acknowledgment within 60 days of the submission deadline, please contact the program contact. Once the application has been assigned an application number, please cite that number on all future correspondence.

PART IV--REVIEW PROCESS

A. General

Each application will be evaluated in a two-part process. First, each application will be screened to ensure that it meets the administrative requirements as set forth in this RFA. Second, applications that meet these requirements will be technically evaluated by a review panel.

Reviewers will be selected based upon training and experience in relevant scientific, extension, or education fields, taking into account the following factors: (a) The level of relevant formal scientific, technical education, or extension experience of the individual, as well as the extent to which an individual is engaged in relevant research, education, or extension activities; (b) the need to include as reviewers experts from various areas of specialization within relevant scientific, education, or extension fields; (c) the need to include as reviewers other experts (e.g., producers, range or forest managers/operators, and consumers) who can assess relevance of the applications to targeted audiences and to program needs; (d) the need to include as reviewers experts from a variety of organizational types (e.g., colleges, universities, industry, state and Federal agencies, private profit and non-profit organizations) and geographic locations; and (e) the need to maintain a balanced composition of reviewers with regard to minority and female representation and an equitable age distribution.

B. Evaluation Factors

The following evaluation factors will be used in reviewing applications:

1. Relevance of the microorganism(s) to be sequenced and the scientific merit of the project. This criterion addresses the scientific and/or practical importance of the microorganism chosen for sequencing, the conceptual adequacy of the sequencing approach including suitability and feasibility of methodology, clarity and delineation of objectives, demonstration of feasibility through preliminary data, novelty, uniqueness and originality.

2. The broader impact of the activity on the biological sciences and agriculture, including education, training, and outreach. This criterion addresses the potential of the proposed activity to contribute to better understanding or improvement of the quality and effectiveness of the Nation's scientific research, education, and human resources capabilities. An important issue is the likelihood of national impact and widespread, appropriate dissemination and use of results in strengthening the biological sciences and agriculture of this nation.

Priority also will be given to projects that integrate education and outreach and those that establish close collaboration among multiple investigators, institutions, and end users.

3. Performance competence. This criterion addresses the technical merit of the proposed approach, the capabilities of the proposed personnel, including those of the Principal Investigator and other senior staff as discussed above, the adequacy of the resources available or proposed,

and the likelihood that this project will lead to a successful, timely, cost-effective completion of the microbial genome sequence(s).

4. Project management. This criterion addresses the overall quality of the technical and managerial aspects of the proposal, including plans for the release of the data and the sharing of the information and resources resulting from the project to the scientific community as noted below, and for management oversight and long-range planning.

5. Scientific collaboration and information sharing. Sequencing of the genome of an organism is a community activity. As such, a close collaboration among the scientists and organizations involved in sequencing activities and effective dissemination to the potential users of the information are important components of this criterion.

6. Appropriateness of the proposed budget. Budget requests should be proportional to the size of the genome(s) to be sequenced. The cost is expected to be 15 cents per nucleotide or less. Larger costs per nucleotide should be clearly justified. It is unlikely that awards will be made in excess of $2.5 million.

C. Conflicts of Interest and Confidentiality

During the peer evaluation process, extreme care will be taken to prevent any actual or perceived conflicts of interest that may impact review or evaluation. For the purpose of determining conflicts of interest, the academic and administrative autonomy of an institution shall be determined by reference to the 2002 Higher Education Directory, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church, Virginia 22042. Phone: (703) 532-2300. Web site: http://www.hepinc.com.

Names of submitting institutions and individuals, as well as application content and peer evaluations, will be kept confidential, except to those involved in the review process, to the extent permitted by law. In addition, the identities of peer reviewers will remain confidential throughout the entire review process. Therefore, the names of the reviewers will not be released to applicants. At the end of the fiscal year, names of panelists will be made available in such a way that the panelists cannot be identified with the review of any particular application.

PART V--AWARD ADMINISTRATION

A. General

Within the limit of funds available for such purpose, the awarding official of CSREES and NSF shall make grants or cooperative agreements to those responsible, eligible applicants whose applications are judged most meritorious under the procedures set forth in this RFA. The date specified by the awarding official of CSREES as the effective date of the grant shall be no later than September 30 of the Federal fiscal year in which the project is approved for support and funds are appropriated for such purpose, unless otherwise permitted by law. It should be noted that the project need not be initiated on the grant effective date, but as soon thereafter as practical so that project goals may be attained within the funded project period. All funds granted by CSREES and NSF under this RFA shall be expended solely for the purpose for which the funds are granted in accordance with the approved application and budget, the regulations, the terms and conditions of the award, the applicable Federal cost principles, and the USDA's and NSF's assistance regulations (parts 3015 and 3019 of 7 CFR).

B. Organizational Management Information

Specific management information relating to an applicant shall be submitted on a one-time basis as part of the responsibility determination prior to the award of a grant identified under this RFA, if such information has not been provided previously under this or another CSREES program. CSREES will provide copies of forms recommended for use in fulfilling these requirements as part of the preaward process. Although an applicant may be eligible based on its status as one of these entities, there are factors which may exclude an applicant from receiving Federal financial and nonfinancial assistance and benefits under this program (e.g., debarment or suspension of an individual involved or a determination that an applicant is not responsible based on submitted organizational management information).

C. Award Document and Notice of Award

The USDA award document shall include at a minimum the following:

(1) Legal name and address of performing organization or institution to whom the Administrator has awarded a grant under the terms of this request for applications;

(2) Title of project;

(3) Name(s) and institution(s) of PD's chosen to direct and control approved activities;

(4) Identifying grant number assigned by the Department;

(5) Project period, specifying the amount of time the Department intends to support the project without requiring recompetition for funds;

(6) Total amount of Departmental financial assistance approved by the Administrator during the project period;

(7) Legal authority(ies) under which the grant is awarded;

(8) Appropriate Catalog of Federal Domestic Assistance (CFDA) number;

(9) Approved budget plan for categorizing allocable project funds to accomplish the stated purpose of the grant award; and

(10) Other information or provisions deemed necessary by CSREES to carry out its respective granting activities or to accomplish the purpose of a particular grant.

An NSF award consists of:

(1) the award letter, which includes any special provisions applicable to the award and any numbered amendments thereto;

(2) the budget, which indicates the amounts, by categories of expense, on which NSF has based its support (or otherwise communicates any specific approvals or disapprovals of proposed expenditures);

(3) the application/proposal referenced in the award letter;

(4) the applicable award conditions, such as Grant General Conditions (NSF-GC-1) or Federal Demonstration Partnership (FDP) Terms and Conditions, and

(5) any announcement or other NSF issuance that may be incorporated by reference in the award letter.

Cooperative agreement awards also are administered in accordance with NSF Cooperative Agreement Terms and Condition (CA-1). Electronic mail notification is the preferred way to transmit NSF awards to organizations that have electronic mail capabilities and have requested such notification from the Division of Grants and Agreements.

PART VI--ADDITIONAL INFORMATION

A. Access To Review Information

Copies of reviews, not including the identity of reviewers, and a summary of the panel comments will be sent to the applicant PD after the review process has been completed.

B. Use of Funds; Changes

1. Delegation of Fiscal Responsibility

Unless the terms and conditions of the grant state otherwise, the grantee may not in whole or in part delegate or transfer to another person, institution, or organization the responsibility for use or expenditure of grant funds.

2. Changes in Project Plans

a. The permissible changes by the grantee, PD(s), or other key project personnel in the approved project grant shall be limited to changes in methodology, techniques, or other similar aspects of the project to expedite achievement of the project's approved goals. If the grantee or the PD(s) is uncertain as to whether a change complies with this provision, the question must be referred to the USDA Authorized Departmental Officer (ADO) or NSF Grants Officer for a final determination. The ADO or Grants Officer is the signatory of the award document, not the program contact.

b. Changes in approved goals or objectives shall be requested by the grantee and approved in writing by the ADO or Grants Officer prior to effecting such changes. In no event shall requests for such changes be approved which are outside the scope of the original approved project.

c. Changes in approved project leadership or the replacement or reassignment of other key project personnel shall be requested by the grantee and approved in writing by the ADO or Grants Officer prior to effecting such changes.

d. Transfers of actual performance of the substantive programmatic work in whole or in part and provisions for payment of funds, whether or not Federal funds are involved, shall be requested by the grantee and approved in writing by the ADO or Grants Officer prior to effecting such transfers, unless prescribed otherwise in the terms and conditions of the grant.

e. Changes in Project Period: The project period may be extended by CSREES or NSF without additional financial support, for such additional period(s) as the ADO or Grants Officer determines may be necessary to complete or fulfill the purposes of an approved project, but in no case shall the total project period exceed five years. Any extension of time shall be conditioned upon prior request by the grantee and

approval in writing by the ADO or Grants Officer, unless prescribed otherwise in the terms and conditions of a grant.

f. Changes in Approved Budget: Changes in an approved budget must be requested by the grantee and approved in writing by the ADO or Grants Officer prior to instituting such changes if the revision will involve transfers or expenditures of amounts requiring prior approval as set forth in the applicable Federal cost principles, USDA or NSF regulations, or grant award.

C. Expected Program Outputs and Reporting Requirements

This Program will provide genome sequence data and mapping information that will fill important gaps in our knowledge of microbial life processes, microbial diversity and the roles that microbes play in diverse ecosystems and/or processes of relevance to U.S. Agriculture. The expected outcome of projects funded through this Program is high quality microbial genomic sequence, much or all of it contiguous, with annotation of open reading frames and deposition in a publicly accessible database. Additionally, for eukaryotic organisms, outcomes may include expressed sequence tag data.

Awardees are expected to publicly release sequence data according to schedules outlined in the application for funding. In addition, applicants are expected to present their project plan and progress at an annual workshop for awardees, details of which will be provided by CSREES on an annual basis. At the conclusion of the project, the Project Director is expected to organize a community workshop in order to assure: (1) an understanding of the data; (2) access to resources such as genomic DNA and clones; and, (3) community-wide planning for the next step(s) to maximize use of the data.

D. *Applicable Federal Statutes and Regulations*

Several Federal statutes and regulations apply to grant applications considered for review and to project grants awarded under this program. For CSREES, these include, but are not limited to:

7 CFR Part 1.1--USDA implementation of the Freedom of Information Act.

7 CFR Part 3--USDA implementation of OMB Circular No. A-129 regarding debt collection.

7 CFR Part 15, subpart A--USDA implementation of Title VI of the Civil Rights Act of 1964, as amended.

7 CFR Part 3015--USDA Uniform Federal Assistance Regulations, implementing OMB directives (i.e., OMB Circular Nos. A-21 and A-122) and incorporating provisions of 31 U.S.C. 6301-6308 (formerly the Federal Grant and Cooperative Agreement Act of 1977, Pub. L. No. 95-224), as well as general policy requirements applicable to recipients of Departmental financial assistance.

7 CFR Part 3017--USDA implementation of Governmentwide Debarment and Suspension (Nonprocurement) and Governmentwide Requirements for Drug-Free Workplace (Grants).

7 CFR Part 3018--USDA implementation of Restrictions on Lobbying. Imposes prohibitions and requirements for disclosure and certification related to lobbying on recipients of Federal contracts, grants, cooperative agreements, and loans.

7 CFR Part 3019--USDA implementation of OMB Circular A-110, Uniform Administrative Requirements for Grants and Other Agreements With Institutions of Higher Education, Hospitals, and Other Nonprofit Organizations.

7 CFR Part 3052--USDA implementation of OMB Circular No. A-133, Audits of States, Local Governments, and Non-profit Organizations.

7 CFR Part 3407--CSREES procedures to implement the National Environmental Policy Act of 1969, as amended.

7 CFR Part 3411—Regulations Governing the National Research Initiative Competitive Grants Program

29 U.S.C. 794 (section 504, Rehabilitation Act of 1973) and 7 CFR Part 15b (USDA implementation of statute)-- prohibiting discrimination based upon physical or mental handicap in Federally assisted programs.

35 U.S.C. 200 et seq.--Bayh-Dole Act, controlling allocation of rights to inventions made by employees of small business firms and domestic nonprofit organizations, including universities, in Federally assisted programs (implementing regulations are contained in 37 CFR Part 401).

For NSF awards, the applicable regulations are cited in the section entitled "Regulation, Guidelines, and Literature in the Catalog of Federal Domestic Assistance under 46.074: Biological Sciences. For specific information on policies and procedures pertaining to the award and administration of NSF grants and cooperative agreements, refer to the NSF Grant Policy Manual which can be found at: http://www.nsf.gov/bfa/cpo/policy/grants.htm.

E. Confidential Aspects of Applications and Awards

When an application results in a grant, it becomes a part of the record the Agency's transactions, available to the public upon specific request. Information that CSREES or NSF determines to be of a confidential, privileged, or proprietary nature will be held in confidence to the extent permitted by law. Therefore, any information that the applicant wishes to have considered as confidential, privileged, or proprietary should be clearly marked within the application. The original copy of an application that does not result in a grant will be retained by the Agency for a period of one year. Other copies will be destroyed. Such an application will be released only

with the consent of the applicant or to the extent required by law. An application may be withdrawn at any time prior to the final action thereon.

F. Regulatory Information

For the reasons set forth in the final Rule-related Notice to 7 CFR part 3015, subpart V (48 FR 29114, June 24, 1983), this program is excluded from the scope of the Executive Order 12372 which requires intergovernmental consultation with State and local officials. Under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 35), the collection of information requirements contained in this Notice have been approved under OMB Document No. 0524-0039.

G. Definitions

For the purpose of this program, the following definitions are applicable:

(1) Administrator means the Administrator of the Cooperative State Research, Education, and Extension Service (CSREES) and any other officer or employee of the Department to whom the authority involved is delegated.

(2) Authorized departmental officer means the Secretary or any employee of the Department who has the authority to issue or modify grant instruments on behalf of the Secretary.

(3) Authorized organizational representative means the president, director, chief executive officer, or other designated official of the applicant organization, who has the authority to commit the resources of the organization.

(4) Budget period means the interval of time (usually 12 months) into which the project period is divided for budgetary and reporting purposes.

(5) Cash contributions means the applicant's cash outlay, including the outlay of money contributed to the applicant by non-Federal third parties.

(6) Department or USDA means the United States Department of Agriculture.

(7) Grant means the award by the Secretary of funds to an eligible organization or individual to assist in meeting the costs of conducting, for the benefit of the public, an identified project which is intended and designed to accomplish the purpose of the program as identified in these guidelines.

(8) Grantee means the organization designated in the grant award document as the responsible legal entity to which a grant is awarded.

(9) Limited institutional success means institutions which are not among the most successful universities and colleges for receiving Federal funds for science and engineering research

(10) Matching means that portion of allowable project costs not borne by the Federal Government, including the value of in-kind contributions.

(11) Partnering means a joint effort among two or more institutions, organizations and/or other entities with the capacity to conduct projects intended and designed to accomplish the purpose of the program.

(12) Peer review means an evaluation of a proposed project for scientific or technical quality and relevance performed by experts with the scientific knowledge and technical skills to conduct the proposed work or to give expert advice on the merits of a project.

(13) Peer review panel means a group of experts qualified by training and/or experience in particular fields to evaluate eligible proposals in those fields submitted under this RFA.

(14) Principal investigator/Project director means the single individual designated in the grant application and approved by the Secretary who is responsible for the direction and management of the project.

(15) Prior approval means written approval evidencing prior consent by an authorized departmental officer as defined in (3) above.

(16) Project means the particular activity within the scope of the program supported by a grant award.

(17) Project period means the period, as stated in the award document, during which Federal sponsorship begins and ends.

(18) Secretary means the Secretary of Agriculture and any other officer or employee of the Department to whom the authority involved is delegated.

(19) Small and mid-sized institutions means academic institutions with a current total enrollment of 15,000 or less including graduate and undergraduate and full- and part-time students. An institution in this instance is an organization that possesses a significant degree of autonomy. Significant degree of autonomy is definied as being independently accredited as determined by reference to the 2001 Higher Education Directory, published by Higher Education Publications, Inc., 6400 Arlington Boulevard, Suite 648, Falls Church Virginia 22042, (703) 532-2300

(20) Third party in-kind contributions means non-cash contributions of property or services provided by non-Federal third parties, including real property, equipment, supplies and other expendable property, directly benefiting and specifically identifiable to a funded project or program.